

*Part A5*

1. A window balance comprising:

a torsion spring having a first end and a second end,

a spiral rod having a first end and a second end,

a threaded follower mounted on said spiral rod for being rotated by said spiral rod when said follower is moved along said spiral rod between the first end and the second end of said spiral rod,

said threaded follower being attached to the first end of said torsion spring for rotating the first end of said torsion spring by rotation of said follower,

first means for attaching the second end of said torsion spring to a window sash for moving said follower along said spiral rod by moving the sash,

second means for attaching the first end of said spiral rod to a window frame against rotation of said spiral rod,

said second means for attaching comprising means for rotating said spiral rod for changing base force in said torsion spring.

2. The window balance of claim 1 further comprising:

said means for rotating said spiral rod comprising a first gear connected to said spiral rod for rotating said spiral rod.

3. The window balance of claim 2, further comprising:

third means for receiving external rotational force, mounted on said first gear, keyed to said first gear for rotating said first gear.

4. The window balance of claim 3, further comprising:

means for locking said third means against rotation.

5. The window balance of claim 2, further comprising:

a second gear axially connected to said spiral rod for rotating said spiral rod, rotationally engaged with said first gear for being rotated by said first gear.

6. The window balance of claim 5 wherein said first gear has an axis that is normal to the axis of said second gear.

7. A window balance comprising:

a torsion spring having a first end and a second end,

a spiral rod having a first end and a second end,

a threaded follower mounted on said spiral rod for being rotated by said spiral rod when said follower is moved along said spiral rod between the first end and the second end of said spiral

rod,

said threaded follower being attached to the first end of said torsion spring for rotating the first end of said torsion spring by rotation of said follower,

first means for attaching the second end of said torsion spring to a window sash for moving said follower along said spiral rod by moving the sash,

second means for attaching the first end of said spiral rod to a window frame against rotation of said spiral rod,

said second means for attaching comprising means for rotating said spiral rod for changing base force in said torsion spring,

a tension spring having a first end connected to said first means for attaching, and having a second end connected to said second means for attaching, and

means for longitudinal engagement for prevention of differential rotational movement, connected to said first means for attaching and to said second means for attaching, for prevention of differential rotational movement between the first end of said tension spring and the second end of said tension spring when said first means for attachment is moved between a first distance and a second distance from said second means for attachment.

8. A window balance comprising:

a torsion spring having a first end and a second end,

a spiral rod having a first end and a second end,

a threaded follower mounted on said spiral rod for being rotated by said spiral rod when said follower is moved along said spiral rod between the first end and the second end of said spiral rod,

said threaded follower being attached to the first end of said torsion spring for rotating the first end of said torsion spring by rotation of said follower,

first means for attaching the second end of said torsion spring to a window sash for moving said follower along said spiral rod by moving the sash,

a gear bearing comprising means for attaching said gear bearing to a window frame against rotation of said gear bearing,

a first gear, mounted in said gear bearing, connected to said spiral rod for rotating said spiral rod,

second means for receiving external rotational force, mounted on said first gear, keyed to said first gear for rotating said first gear,

means for urging said second means from a first position on said first gear to a second position on said first gear,

means mounted on said bearing configured for contacting said second means for preventing rotation of said second means when said second means is in said second position.

9. A window balance comprising:

a window frame,

a window sash movably mounted in said window frame,

a gear bearing mounted on said window frame against rotation of said gear bearing,

a torsion spring having a first end and a second end,

a first gear, mounted in said gear bearing, connected to the first end of a spiral rod for rotating said spiral rod,

a threaded follower mounted on said spiral rod for being rotated by said spiral rod when said follower is moved along said spiral rod,

said threaded follower being attached to the first end of said torsion spring for rotating the first end of said torsion spring by rotation of said follower,

the second end of said torsion spring being mounted on said sash against rotation of said second end of said torsion spring, for moving said follower along said spiral rod by moving said sash.

10. A window balance comprising:

a window frame,

a window sash movably mounted in said window frame,

a gear bearing mounted on said window frame against rotation of said gear bearing,

a torsion spring having a first end and a second end,

a first gear, mounted in said gear bearing, connected to the first end of a spiral rod for rotating said spiral rod,

a threaded follower mounted on said spiral rod for being rotated by said spiral rod when said follower is moved along said spiral rod,

said threaded follower being attached to the first end of said torsion spring for rotating the first end of said torsion spring by rotation of said follower,

the second end of said torsion spring being mounted on said sash for moving said follower along said spiral rod by moving said sash,

means for longitudinal engagement connected to said gear bearing and to said second end of said torsion spring, configured for prevention of differential rotational movement between said gear bearing and said second end of said torsion spring when said second end of said torsion spring is moved between a first distance and a second distance from said gear bearing.

11. A window balance comprising:

a torsion spring having a first end and a second end,

a spiral rod having a first end and a second end,

a threaded follower mounted on said spiral rod for being rotated by said spiral rod when said follower is moved along said spiral rod between the first end and the second end of said spiral rod,

said threaded follower being attached to the first end of said torsion spring for rotating the first

end of said torsion spring by rotation of said follower,

first means for attaching the second end of said torsion spring to a window sash for moving said follower along said spiral rod by moving the sash,

a bearing housing comprising means for attaching said bearing housing to a window frame,

a first gear mounted in said housing, axially connected to said spiral rod for rotating said spiral rod,

a second gear rotationally engaged with said first gear for rotating said first gear,

a keyed hole in said second gear,

an insert in said keyed hole, keyed to said hole so that insert rotates said second gear when said insert is rotated,

means for urging said insert from a first position on said second gear to a second position on said second gear,

means on said housing contacting said insert for preventing rotation of said insert when said insert is in said second position.

12. A window balance comprising:

a window frame,

a window sash movably mounted on said window frame,

a torsion spring having a first end and a second end,

a spiral rod having a first end and a second end,

a threaded follower mounted on said spiral rod for being rotated by said spiral rod when said follower is moved along said spiral rod between the first end and the second end of said spiral rod,

said threaded follower being attached to the first end of said torsion spring for rotating the first end of said torsion spring by rotation of said follower,

the second end of said torsion spring being mounted on said window sash for moving said follower along said spiral rod by moving the sash,

a bearing housing attached to said window frame,

a first gear mounted in said housing, axially connected to said spiral rod for rotating said spiral rod,

a second gear rotationally engaged with said first gear for rotating said first gear,

a keyed hole in said second gear,

an insert in said keyed hole, keyed to said hole so that insert rotates said second gear when said insert is rotated,

means for urging said insert from a first position on said second gear to a second position on said second gear,

means on said housing contacting said insert for preventing rotation of said insert when said insert is in said second position.